

SCHOOL FACILITIES MANUAL
Nonstructural Protection Guide

SECTION B

**INVENTORY FORMS AND INVENTORY
PROCESS FOR
NONSTRUCTURAL ELEMENTS**

CLASSROOM SAFETY CHECKLIST

INVENTORY FORMS

INTRODUCTION

Duplicates of the inventory forms in Section B are provided with this guide. These copies can be included in a District Training Packet. This will enable each district to add additional information to tailor the training packet to meet individual district needs and requirements. Copies of the inventory forms can be provided to district staff who will be completing building inventories. District staff involved in the nonstructural protection program typically include maintenance and facilities staff. The District Manager should have the responsibility of maintaining a record of completed inventories, including those completed by school Site Teams.

A building Nonstructural Safety Binder should be maintained at each school site. Either the duplicates of the inventory forms that accompany this guide, copies provided by the district, or copies made from the guide may be kept in the school binder to be used as a master set of inventory forms. Site Teams can make copies from the inventory forms kept in the building binder to inventory building spaces. Completed forms can be filed in the building binder. District staff can check the building binder to see what has been completed. Other building information that can help Site Teams complete the nonstructural inventory may also be kept in the building binder. Site Teams typically include administrators, teachers, custodians, parents, and community volunteers. District staff may work with the Site Team.

Occupancy Types

Inventory forms have been developed for five occupancy types:

- Normal (Classrooms, Offices, Libraries);
- Assembly (Multi-Purpose Rooms, Halls, Stairwells, Exits, Gymnasiums, Auditoriums);
- Special Use (Kitchens, Shops, Art Rooms, Science and Computer Laboratories, Pool Rooms);
- Support (Utility Rooms, Mechanical Rooms, Storage Rooms, Penthouses); and
- Exterior Spaces (roof, external walls, exits, utility connections).

Each of these occupancies have some nonstructural elements in common and some that are specific to the occupancy type. Common elements are repeated on each form to allow all inventory information for a particular area to be entered onto one form.

Level 1 and Level 2 Inventory

The Level 1 inventory is designed for individuals with no knowledge of building systems, construction practice or architecture. Level 1 focuses on identifying the presence and number of selected nonstructural elements located in Normal, Assembly, and Special Use occupancies. A Level 1 inventory does not include using a ladder to access nonstructural elements, such as ceiling systems, or using judgement to evaluate the quality of attachments that appear to secure nonstructural elements. Level 1 does not include the inventory of Support Occupancies or Exterior spaces. Site Team members will usually complete a Level 1 inventory.

The Level 2 inventory includes identifying the presence and number of nonstructural elements in any occupancy, the evaluation of the quality of attachments that appear to secure nonstructural elements, and the determination of the need for structural engineering, architectural, or contracting services. Individuals completing a Level 2 inventory are usually custodial, maintenance, or facilities staff who are familiar with the building and with construction practice. Some volunteers may have sufficient skills to complete a Level 2 inventory, but should be supervised by district staff, complete safety training, and use proper safety equipment. The District should consider actions to best manage legal exposure if volunteers are used to complete a Level 2 inventory.

INVENTORY PROCESS

The Nonstructural Protection Guide primarily focuses on efforts to improve the safety of building occupants. The large number and variety of nonstructural elements in a school building makes the protection of all nonstructural elements from earthquake-induced damage expensive and unnecessary. Time and money spent completing extensive, detailed inventories of nonstructural elements could be better applied to protecting those elements of greater concern.

Setting the goals and objectives

A school district needs to set program goals and objectives beyond basic life safety to protect both building occupants and district investments. There are many nonstructural elements in a school building. Decide what occupancies and what elements will be included in the inventory. Take the building in steps.

The following is just an example of elements and spaces that the district may want to include in the inventory. A district may want to add additional elements and spaces or reduce the number shown below. The inventory and installation of protective measures for these elements may be carried out in phases.

- Desktop Computers
Computers in libraries and offices may be a high priority because they often contain essential administrative data
 - Financially: desktop computers represent a large investment that if destroyed may not be covered by insurance due to high insurance deductibles
 - Life safety risk if located over students' heads, such as often occurs in libraries
- Overhead TV's and audio carts
Overhead TV's will normally be secured on a platform attached to the wall. Reinforcement to the wall and to the platform increases safety
Quake mats can be placed on VCR's to reduce flying objects and damage
TV's need to be attached to audio visual carts for basic life safety.
- File cabinets and tall shelving
File cabinets and tall shelving are likely to overturn if not secured. If located near an entrance they may prevent evacuation. Either remove to a safer location or secure to wall stud.
- Refrigerators and vending machines
Need to be secured to avoid tipping and crushing building occupants.

Strengthening architectural systems, such as recessed lighting and exterior cladding, is generally included in building remodel plans. Inventory and assessment of these systems will be completed by district staff.

Completing the inventory

The inventory of building spaces is most efficiently completed by a district core team. The core team may include custodial and maintenance staff, the site coordinator, and other district staff. The core team becomes increasingly proficient with experience. The core team encourages building staff, parents, and other volunteers to help in the inventory process and oversees their activities.

Training requirements and tools:

- Training should be provided by the school district.
- Tools should be provided by the school district.
- School personnel set program goals and objectives and supervise program activities.

Preparing a work plan:

The work plan should indicate

- The location, the type and the number of nonstructural element(s) to be protected
- Who is responsible for implementing the protective measure
- A list protective options, including Good House Keeping, installation of restraints, and the relocation or removal of elements.

1. CLASSROOMS, OFFICES, AND LIBRARY SPACES

Name of school:	Building:					
Date of inventory	Room number (if not numbered, enter the name of the space inventoried):					
Circle level of inventory: Level 1 Level 2	Enter your Name:	Item Present		Quantity	Comment	Date
		Yes	No	How Many?	M = Move A = Anchor	Fixed
Desk-Top and Counter-Top Equipment						
Computer Monitors (Detail 6.1)						
CPU (Detail 6.1)						
Paper Cutter (Detail 6.1)						
Printer (Detail 6.1)						
Microwave (Detail 6.1)						
Aquariums, terrariums, animal cages (Detail 6.1)						
Tight electrical connections to computers or other electrical equipment (Detail 3.4).						
Furnishings and Equipment – Free Standing						
Tall file cabinet, storage cabinet, coat closet or card catalog, 4 feet (Detail 6.2; 6.3)						
Tall shelves over 4 feet (Detail 6.7)						
Refrigerator (Detail 6.5)						
Audio-visual cart with TV or other heavy equipment (Detail 6.10)						
Heavy modular partition walls separate office areas (Detail 11.3)						
Wall Mounted Items						
Heavy display cases, art work, fire extinguishers, (Detail 6.9)						
Cupboards (Detail 6.9)						
Lockers and cabinets (Detail 6.4)						
Glass panels, windows, or other panes of glass (Detail 7.1) (Level 2 only)						
Ceiling-height partition walls (Detail 11.1) (Level 2 only)						
Masonry partition walls (Detail 11.2) (Level 2 only)						
Dangerous Shelf Storage						
Heavy supplies and equipment (over 5 pounds)						
Cleaning or other chemicals (ammonia, bleach)						
Glass ware or other fragile items						

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

<u>Name of school:</u>	<u>Building:</u>				
<u>Date of inventory</u>	<u>Room number (if not numbered, enter the name of the space inventoried):</u>				

<u>Circle level of inventory:</u> Level 1 Level 2	Enter your Name:	Item Present		Quantity	Comment M = Move A = Anchor	Date Fixed
		Yes	No	How Many?		
Comments						

Emergency Supplies, Equipment, And Information

Yes	No	
		School emergency procedures are posted in each classroom, office, and library.
		Earthquake drop, cover, and hold drills are practiced.
		There are sufficient emergency supplies for each member in the classroom, office, or library (first aid supplies, water, space blankets, battery operated radio, food, flashlight or candle sticks)
		A list of student names and home emergency contact information (name of emergency contact and telephone number) is kept current for each classroom. Consider adding this information to student identification cards.
		A list of staff names and home emergency contact information (name of emergency contact and telephone number) is kept current, including main office staff, school nurse, etc.)

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

2. MULTI-PURPOSE ROOMS, GYMNASIUMS, AUDITORIUMS, HALLS, STAIRWELLS

<u>Name of school:</u>	<u>Building:</u>
<u>Date of inventory</u>	<u>Room number (if not numbered, enter the name of the space inventoried):</u>

Circle Level of Inventory:	Enter Your Name:	Item Present		Quantity	Comments M = move A = Anchor	Date Fixed
		Yes	No	How Many?		
Level 1	Level 2					
Desk-Top and Counter-Top Equipment						
Furnishings and Equipment – Free Standing						
Vending machines, refrigerators, and freezers. Enter combined number of units (Details 6.5, 6.8)						
Audio-visual cart with TV or other heavy equipment (Detail 6.10)						
Tall shelves over 4 feet (Detail 6.7)						
Piano without locked wheels (Detail 6.10)						
Folding tables or bleachers on wheels (Detail 16.10)						
Tall, heavy gym apparatus						
Wall Mounted Items						
Emergency lights						
Television set						
Fire extinguishers on open hooks or in recessed wall cupboards (Detail 6.9)						
Heavy speakers and spotlights						
Heavy display cases and art work (Detail 6.9)						
Folding wall dividers						
Wall cupboards (Detail 6.9)						
Lockers, cabinets, and coat closets (Detail 6.4)						
Display case glass, windows, or door panes of glass (Detail 7.1)						
Ceiling-height partition walls (Detail 11.1)						
Masonry partition walls (Detail 11.2)						
Stairways						
Dangerous Shelf Storage						
Heavy supplies, equipment, emergency battery operated light units (over 5 pounds)						

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

<u>Name of school:</u>	<u>Building:</u>				
<u>Date of inventory</u>	<u>Room number (if not numbered, enter the name of the space inventoried):</u>				

Circle Level of Inventory: Level 1 Level 2	Enter Your Name:	Item Present		Quantity	Comments M = move A = Anchor	Date Fixed
		Yes	No	How Many?		
Cleaning or other chemicals (ammonia, bleach)						
Glass ware, stacks of glass plates or other fragile items						
Overhead Items						
Heavy hanging planters or other decorative objects (sitting or standing)						
Skylight glass panels (Detail 7.1)				Sq. Ft.		
Suspended ceilings (Detail 10.1, 10.2, and 10.3)				Sq. Ft		
Suspended light fixtures, air diffusers, and ventilation grills (Detail 10.4, 11.1)						
Pendant-mounted lights or double-hung fluorescent lights (Detail 10.5)						
Cable tray supports (Detail 3.1)				Lineal Ft.		
Suspended space heaters (Detail 10.7)						
Suspended piping				Lineal Ft.:		
Comments: 						

Emergency Supplies, Equipment, And Information

Yes	No	
		School emergency procedures are posted .
		Building floor plans showing evacuation routes are posted
		Building floor plans are kept up-to-date
		Earthquake drop, cover, and hold drills are practiced.
		Public address system is connected to emergency power
		Exits are clearly marked
		Capability exists to provide on-site shelter

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

3. KITCHENS, SHOPS, ART ROOMS, SCIENCE, AND COMPUTER LABORATORIES, AND POOL ROOMS

Name of school:	Building:					
Date of inventory	Room number (if not numbered, enter the name of the space inventoried):					
Circle level of inventory: Level 1 Level 2	Enter Your Name	Item Present		Quantity	Comment M = Move A = Anchor	Date Fixed
		Yes	No	How Many?		
Desk-Top and Counter-Top Equipment						
Microscope						
Computer Monitor (Detail 6.1)						
CPU (Detail 6.1)						
Aquariums, terrariums, animal cages (Detail 6.1)						
Microwave (Detail 6.1)						
Small counter-top refrigerator						
Electrical connections to equipment :						
Furnishings and Equipment – Free Standing						
Compressed gas cylinder (Detail 8.2)						
Audio-visual cart with TV or other heavy equipment (Detail 6.10)						
Chemical supply cart on wheels (Detail 6.10)						
File cabinets (Detail 6.2)						
Vending machines, refrigerators, and freezers. Enter combined number of units (Details 6.5, 6.8)						
Tall shelves over 4 feet (Detail 6.7)						
Water heater in kitchen area (Detail 9.7)					X	
Gas-fired kitchen or lab equipment					X	
Laboratory benches and counters						
Laboratory fume hoods						
Raised access floor (Detail 2.1)						
Kiln						
Tall, heavy shop equipment, table saws, drill presses (Detail 6.1)						
Pool filtration tanks (Detail 9.1)						
Wall Mounted Items						
Television set						
Fire extinguishers (Detail 6.9)						
Wall cupboards (Detail 6.9)						

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

Emergency Supplies, Equipment, And Information

Yes	No	
		Automatic gas or electricity shut-offs are installed on shop and laboratory equipment
		Manual gas and electricity shut-off information and key to room shut-off valve available
		Staff and students are trained to move away from dangerous areas during earthquakes
		Spill control and clean-up materials are kept in science laboratories, pool rooms, and other areas where hazardous materials are stored.
		Area specific emergency procedures are posted, including emergency contacts and phone numbers
		An updated inventory is maintained of all chemicals on site.
		Material Supply Data (MSD) inventory of chemicals is posted
		Telephone number of nearest burn center and poison center is posted.

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory
Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

4. UTILITY ROOMS, MECHANICAL ROOMS, STORAGE ROOMS, BATH ROOMS, AND PENTHOUSES

Name of school:		Building:				
Date of inventory		Room number (if not numbered, enter the name of the space inventoried):				

Circle level of inventory: Level 1 Level 2	Enter your name:	Item Present		Quantity How Many?	Comments M = Move A = Anchor	Date Fixed
		Yes	No			
Desk-Top and Counter-Top Equipment						
Computer Monitor and test equipment (Detail 6.1)						
CPU (Detail 6.1)						
Electrical connections to equipment :						
Furnishings and Equipment – Free Standing						
Wheeled cart or small table for communication system monitor or other test equipment (Detail 6.10)						
Water heater (Detail 9.7)						
Gas-fired boiler						
Gas furnace						
Emergency power system (Detail 3.3)						
Emergency power system battery sets (Detail 3.3)						
Transformer						
Sprinkler system riser (Detail 6.3)						
Water pump (Detail 6.3)						
Wall Mounted Items						
Fire extinguishers (Detail 6.9)						
Electrical Panel						
Plumbing Fixtures - flush tanks						
Water storage – day tank						
Masonry partition walls (Detail 11.2)						
Dangerous Shelf Storage						
Cleaning chemical (ammonia and bleach) (Detail 8.1)						
Heavy items						
Overhead Items						
Suspended ceilings (Detail 10.1, 10.2, and 10.3)				Sq. Ft.		
Suspended light fixtures, air diffusers, and ventilation grills (Detail 10.4, 11.1)						

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachments and need for protective measures

May 2000

<u>Name of school:</u>	<u>Building:</u>					
<u>Date of inventory</u>	<u>Room number (if not numbered, enter the name of the space inventoried):</u>					
Circle level of inventory: Level 1 Level 2	Enter your name:	Item Present		Quantity	Comments M = Move A = Anchor	Date Fixed
		Yes	No	How Many?		
Pendant-mounted lights or double-hung fluorescent lights (Detail 10.5)						
Water distribution pipes						
Cable tray supports (Detail 3.1)						
Suspended space heaters (Detail 10.7)						
Suspended air condition unit (Detail 9.5)						
Suspended duct system						
Comments						

Emergency Supplies, Equipment, And Information

Yes	No	
		Flashlights are available in each room
		Automatic gas shut-off is installed on gas-fired equipment
		Gas, electricity, and water shut-off information is posted
		Tools to turn off utilities are easily accessible
		Several staff members know how to turn off utilities..
		Area specific emergency procedures are posted, including emergency contacts and phone numbers

Level 1: Identify item and quantity; do not assess quality of attachments or use ladder to do inventory

Level 2: Identify item and quantity; assess quality of attachments and need for protective measures

May 2000

5. BUILDING EXTERIOR

Name of school:	Building:
Date of inventory	Room number (if not numbered, enter the name of the space inventoried):

Circle level of Inventory:	Enter Your Name:	Item Present		Quantity	Comments M = Move A = Anchor	Date Fixed
		Yes	No	How Many?		
Roof						
	Masonry chimney (Detail 6.1)					
	Masonry parapet walls					
	Masonry cornices					
	HVAC units (Detail 6.1)					
Exterior Walls						
	Masonry or concrete wall to floor connection					
	Building entrances					
	Heavy wall decorations					
Adjacent to building						
	Vending machines					
	Building canopies and covered walkways					
Gas Service						
	Natural gas meter					
	Gas distribution piping					
	Automatic gas shut-off valve					
Electrical Service						
	Overhead wires (Detail 3.4)					
	Site transformer					
General Comments						

Level 1: Identify item and quantity; do not assess quality of attachment, use ladder, or go onto roof

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

Emergency Supplies, Equipment, And Information

Yes	No	
		A survey of the on-site gas distribution system has been completed. While in some instances an automatic shut-off valve on the main gas meter may be an effective measure to reduce potential gas leaks, such a valve may be ineffective in some circumstances. Other actions may provide better protection from potential gas hazards. The variation in gas system characteristics from building to building makes a generic recommendation inappropriate.
		A grounds program is in place that addresses vegetation hazards, such as fragile trees that could overturn and cause building damage or damage to electrical service, excessive vegetation that could prevent access to and observation of areas near school buildings or generate fire hazards.
		The nearest pay phone has been identified in case on-site service does not function. Pay phones may function when on-site service does not. Test internal phone system to determine if service is delayed or not available by blowing into the speaker. If noise is heard in the earpiece, the system is delayed rather than out of order. If this is an emergency, do not hang-up or click the connection, as that will place you at the end of the cue.

Level 1: Identify item and quantity; do not assess quality of attachment, use ladder, or go onto roof

Level 2: Identify item and quantity; assess quality of attachment and need for protective measures

May 2000

Classroom Safety Checklist

Staff name: _____ Room #: _____ Date: _____

Assessment Conducted by: _____

Instructions:

1. Check YES or NO for each of the following items. Skip any items that are not applicable to your classroom.
2. Go back and circle each NO; these are the items that you have identified as dangerous to you and your classmates.
3. For each NO, suggest a way to remove the danger (use the comments space).
4. For each YES, explain why your team thinks the feature is earthquake resistant.

YES NO

		Are desks and tables located where they cannot slide and block exits? Comments:
		Are the tops of tall (4 or 5 drawer) file cabinets securely attached to the wall? Or out of the way from toppling on students or yourself? Comments:
		Do file cabinet doors have latches? Do you securely close the drawers Comments:
		Are desktop computers securely fastened to work spaces? Or out of way if a monitor falls over? Comments:
		Are bookshelves, cabinets, and coat closets secured to the wall and/or attached to each other? Comments:
		Are display cases or aquariums protected against overturning or sliding off tables? Comments:
		Is freestanding equipment on wheels secured against overturning or sliding? Comments:

YES NO

		Is freestanding equipment protected against rolling? Or falling over? Comments:
		Are all heavy, sharp, or breakable wall decorations securely mounted, with closed eye hooks, for example? Comments:
		Do books or materials stored on shelves have adequate restraints to keep them from flying off the shelves? Are heavy items on lower shelves? Comments:
		Are fire extinguishers securely mounted? Comments:
		If there are potted plants and other heavy items on top of file cabinets or in other overhead locations, are they restrained? Comments:
		Do you see other hazards not included in this list? Specify. Comments:

American Red Cross Checklist